3rd Grade Science Curriculum Guide
Lunenburg County Schools
June 2014

Marking Period: First Nine Weeks
Days: Ongoing
Reporting Category/Strand: Scientific Investigation, Reasoning, and Logic

SOL 3.1	**The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which** **a) observations are made and are repeated to ensure accuracy;** **b) predictions are formulated using a variety of sources of information;** **c) objects with similar characteristics or properties are classified into at least two sets and two subsets;** **d) natural events are sequenced chronologically;** **e) length, volume, mass, and temperature are estimated and measured in metric and standard English units using proper tools and techniques;** **f) time is measured to the nearest minute using proper tools and techniques;** **g) questions are developed to formulate hypotheses;** **h) data are gathered, charted, graphed, and analyzed;** **i) unexpected or unusual quantitative data are recognized;** **j) inferences are made and conclusions are drawn;** **k) data are communicated;** **l) models are designed and built; and** **m) current applications are used to reinforce science concepts.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● make and communicate careful observations. ● demonstrate that observations should be repeated to ensure accuracy. ● classify objects into at least two major sets and subsets based on similar characteristics, such as predator/prey and herbivore, carnivore, and omnivore. ● sequence natural events chronologically (Example: 3.8 — plant and animal life cycles, phases of the moon, the water cycle, and tidal change). ● measure length to the nearest centimeter, mass to the nearest gram, volume to the nearest milliliter, temperature to the nearest degree Celsius, and time to the nearest minute, using the appropriate instruments. ● develop hypotheses from simple questions. These questions should be related to the concepts in the third-grade standards.

	Hypotheses should be stated in terms such as: ―If an object is cut into smaller pieces, then ● the physical properties of the object and its smaller pieces will remain the same.‖ ● analyze data that have been gathered and organized. ● communicate results of investigations by displaying data in the form of tables, charts, and graphs. Students will construct bar and picture graphs and line plots to display data (Example: 3.7 — comparison of types of soil and their effect on plant growth). ● communicate any unexpected or unusual quantitative data that are noted. ● make and communicate predictions about the outcomes of investigations. ● design and build a model to show experimental results.
Essential Questions	
Primary Resources	**Correlations** AIMS ● **“**What Is the Temperature?”, AIMS. Students will learn how to read a thermometer. ● “When It’s Hot It’s Hot”, AIMS. Students will compute the average temperature per day and will graph the results. ● “Raisin Fun”, AIMS. Students will collect and record data from a slice of raisin bread and from two brands of raisins. ● “Cat Scan”, AIMS. Students will gain experience in the construction and use of bar graphs, circle graphs, binary tree diagrams, and Venn diagrams. ● “Just A Minute”, AIMS. The students will make a timer which will measure a minute. ● “Have You Got a Minute?” AIMS. Students will learn what they can do on one minute. “The Penny Sort”, AIMS. Students will use the minting dates of 50 pennies as data for graphing and finding the median and mode. ● “Massing About With Bats”, AIMS. Students will find objects in their room that approximate the masses of some bats. Science Experiments **Interactive Websites** **Lesson Plans** **Videos** Discovery Education: Understanding Units of Measure **Literature/Music Connections** Janice VanCleave's Rocks and Minerals: mind-boggling experiments you can turn into science fair projects By Janice VanCleave, illustrated by Doris Ettlinger Smash it! Crash it! Launch it! : 50 mind-blowing, eye-popping science experiments By Rain Newcomb & Bobby Mercer, illustrated by Tom LaBaff

	Janice VanCleave's Great Science Project Ideas From Real Kids By Janice VanCleave, illustrations by Laurie Hamilton Bill Nye the Science Guy's Big Blast of Science By Bill Nye, drawings by Terry Marks, photographs by Tom Owen Hands-on Projects about Earth and Space by Krista West Scientists Ask Questions By Ginger Garrett, consultant Linda Bullock The Science Fair from the Black Lagoon by Mike Thaler, illustrated by Jared Lee
Essential Vocabulary	characteristics: a feature or quality belonging typically to a person, place, or thing and serving to identify it properties: a thing or things belonging to someone length: the measurement or extent of something from end to end volume: the amount of space that a substance or object occupies mass: the quantity of matter as determined from its weight temperature: the degree or intensity of heat present in a substance or object hypothesis: a proposed explanation data:collected data about a given topic investigate: to gather information conclusion: an idea made based upon envidence evidence: information or facts that make you believe something is true' observe: to see, hear, touch, taste or smell

Marking Period: First Nine Weeks
Days: 15
Reporting Category/Strand: Matter

SOL 3.3	**The student will investigate and understand that objects are made of materials that can be described by their physical properties. Key concepts include** **a) objects are made of one or more materials;** **b) physical properties remain the same as the material is changed in visible size; and** **c) visible physical changes are identified.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will explain that physical properties are observable characteristics that enable one to differentiate objects. ● infer that objects are made of one or more materials based on observations of the physical properties that are common to each individual object. ● compare the physical properties of smaller, visible pieces of a material to those physical properties of the entire material. ● conclude that materials have their own set of physical properties that are observable.

	● design an investigation to determine if the physical properties of a material will remain the same if the material is reduced in size.
Essential Questions	
Primary Resources	**Correlations** AIMS ● AIMS, "Melt an Ice Cube" Students will discover the fastest way to melt ice and will find the best material to keep ice from melting. ● **"**Change Matters", AIMS. Students will determine whether various changes in matter are physical or chemical. ● "Magnify", AIMS. Students will have experience using a magnifying lens. ● "Magniviewer", AIMS. Students will construct and use a microscope made with a hand lens and a half-pint milk carton. **Interactive Websites** Matter Matching- SOL Pass Solids, Liquids, Gases Drag and Drop-SOLPass Solid, Liquids, Gases-Particles **Lesson Plans** VDOE: ESS Matter Matters VDOE: ESS What's The Matter? VDOE: ESS Investigating Matter VDOE: ESS Changing Matter **Videos** States of Matter-BrainPop **Literature/Music Connections** Matter by Sally M. Walker; photographs by Andy King. Matter by Kay Manolis; consultant, Duane Quam Matter by Christine Webster What is Matter? by Don L. Curry; consultant, Linda Bullock States of Matter: a question and answer book by Fiona Bayrock Solids, Liquids, and Gases by Ginger Garrett; consultant, Linda Bullock What are Atoms? by Lisa Trumbauer The Magic School Bus: At the Water Works by J. Cole Matter by Sally M. Walker; photographs by Andy King. Matter by Kay Manolis; consultant, Duane Quam Matter by Christine Webster

	What is Matter? by Don L. Curry; consultant, Linda Bullock States of Matter: a question and answer book by Fiona Bayrock Solids, Liquids, and Gases by Ginger Garrett; consultant, Linda Bullock What are Atoms? by Lisa Trumbauer
Essential Vocabulary	physical properties: observable characteristics that enable one to differentiate objects matter: anything that has mass and takes up space mass: a measure of the amount of matter in a solid, liquid, or gas solid: a state of matter that has a definite shape and volume liquid: a state of matter that has a definite volume but takes the shape of its container gases: a state of matter that takes both the shape and volume of its container

Marking Period: First Nine Weeks
Days: 5
Reporting Category/Strand: Earth Patterns, Cycles, and Change

SOL 3.9	**The student will investigate and understand the water cycle and its relationship to life on Earth. Key concepts include** **a) there are many sources of water on Earth;** **b) the energy from the sun drives the water cycle;** **c) the water cycle involves several processes;** **d) water is essential for living things; and** **e) water on Earth is limited and needs to be conserved.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● identify the sun as the origin of energy that drives the water cycle. ● describe the processes of evaporation, condensation, and precipitation as they relate to the water cycle. ● construct and interpret a model of the water cycle. ● identify the different ways that organisms get water from the environment. ● identify major water sources for a community, including rivers, reservoirs, and wells. Describe the major water sources for the local community. ● explain methods of water conservation in the home and school. ● identify and communicate the importance of water to people and to other living organisms.

	● analyze possible sources of water pollution in their neighborhoods, at school, and in the local community. This includes runoff from over-fertilized lawns and fields, oil from parking lots, eroding soil, and animal waste.
Essential Questions	
Primary Resources	**Correlations** AIMS ● **"**The Mini Water Cycle", AIMS. Students will demonstrate the processes of evaporation and condensation within a miniature water cycle inside a plastic bag. ● "Moving Molecules", AIMS. Students will determine if the amount of surface area will affect the evaporation rate of liquids. ● "Pond Today—Meadow Tomorrow", AIMS. Students will examine the changes in the environment as they simulate a pond turning into a meadow as the water evaporates. ● "Water Wonders", Project Learning Tree. Students will conduct an experiment to discover how plants affect the movement and quality of water. ● "Where Is Water?, AIMS. Students will identify the places water is found. ● "What Make Rain?, AIMS. Students will focus on the water cycle. ● "A Disappearing Act", AIMS. Students will see the result of water evaporating into the atmosphere. ● "Help Save the Birds!", AIMS. Students will understand the process of filtration by devising a system to filter dirty water. **Interactive Websites** SOL Pass: Water Cycle Mini Quiz Water Cycle Quiz Water Cycle Animation **Lesson Plans** **VDOE: ESS"A- Reservoiring" We Will Go** **VDOE: ESS Every Drop Counts** **Videos** BrainPOP: Water Cycle **Literature/Music Connections** Water Cycle Ray James. The Water Cycle by Rebecca Olien. Water Cycle by Monica Hughes. The Water Cycle by Helen Frost. How We Use Water by Carol Ballard.

	Water by Christin Ditchfield. Drip! Drop! How Water Gets to Your Tap by Barbara Seuling, illustrated by Nancy Tobin. Water on the Move by Suzanne Slade. Water: Up, Down, and all Around by Natalie M. Rosinsky, illustrated by Matthew John
Essential Vocabulary	evaporation: a liquid changing into a gas condensation: a gas changing into a liquid precipitation: rain, snow, sleet, or hail that falls to the ground

Marking Period: Second Nine Weeks
Days: 10
Reporting Category/Strand: Earth Resources

SOL 3.11	**The student will investigate and understand different sources of energy. Key concepts include** **a) energy from the sun;** **b) sources of renewable energy; and** **c) sources of nonrenewable energy.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will explain that the sun is the major source of energy for Earth. ● identify sources of energy and their uses. ● describe how solar energy, wind, and moving water can be used to produce electricity. ● describe how fossil fuels are used as an energy source. ● compare and contrast renewable and nonrenewable energy sources. ● analyze the advantages and disadvantages of using different naturally occurring energy sources. ● design a basic investigation to determine the effects of sunlight on warming various objects and materials, including water.
Essential Questions	

3rd Grade Science Curriculum Guide
Lunenburg County Schools
June 2014

Primary Resources	**Correlations** AIMS ● **"**Light Sources", AIMS. Students will investigate many light sources. ● "Heat and Color", AIMS. Students will observe that dark colors absorb heat faster than light colors. ● "Which Way?", AIMS. Students will construct wind vane and understand why it is important to know from which direction the wind is blowing. Project Learning Tree ● "Renewable or Not?", Project Learning Tree. Students will identify renewable, nonrenewable, perpetual, reusable, and recyclable resources and explain the differences. They will also play a game that simulates society's use of these resources. ● "A Few of My Favorite Things", Project Learning Tree. Students will explain how different materials that go into making a product all come from natural resources. Renewable and nonrenewable resources are identified. **Interactive Websites** Power Play **Lesson Plans** **VDOE: ESS Is It Hotter?** **VDOE: ESS Naturally Occurring Sources of Energy** **VDOE: ESS Fossil Fuels** **Videos** Discovery Education: Learning About Natural Resources **Literature/Music Connections** Energy in Motion by Melissa Stewart Force and Motion by Clint Twist Force and Movement by Barbara Taylor Looking at Forces and Motion: How do things move? by Angela Royston Energy Crisis: The Future of Fossil Fuels by Daniel Faust Fossil Fuel Power by Josepha Sherman Earth Friendly Living by Miriam Coleman Solar Power by Josepha Sherman Our Earth: Clean Energy by Peggy Hock

Essential Vocabulary	renewable resources: energy sources that can be replaced nonrenewable resources: energy sources that cannot be replaced Sun: the closest star to Earth and the center of the solar system + fossil fuels: a natural fuel such as coal or gas energy: ability to cause movement or change

Marking Period: Second Nine Weeks
Days: 10
Reporting Category/Strand: Force, Motion, and Energy

SOL 3.2	**The student will investigate and understand simple machines and their uses. Key concepts include** **a) purpose and function of simple machines;** **b) types of simple machines;** **c) compound machines; and** **d) examples of simple and compound machines found in the school, home, and work environments.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● identify and differentiate the six types of simple machines: lever, screw, pulley, wheel and axle, inclined plane, and wedge. ● differentiate and classify specific examples of simple machines found in school and household items. These include a screwdriver, nutcracker, screw, flagpole pulley, ramp, and seesaw. ● analyze the application of and explain the function of each of the six types of simple machines. An example would be that an inclined plane is a ramp to make it easier for a heavy object to be moved up or down. ● identify and classify the simple machines which compose a compound machine, such as scissors, wheelbarrow, and bicycle. ● design and construct an apparatus that contains a simple machine.
Essential Questions	
Primary Resources	**Correlations** AIMS ● "The Wedge-Ease", AIMS. Students will construct wedges from cardboard and use weights to determine which wedge pushes books apart with the least force. ● "Energy", AIMS. An information sheet on the types of simple machines and other facts about energy. ● "Take It Easy", AIMS. Students will learn how the six simple machines work. ● **"**Fulcrums on the Move All Wound Up", AIMS. Students will create a thread-spool tractor and examine the role of friction in its

movement and make modifications to make it travel farther.

- "Gearing Up", AIMS. Students will construct gears and discover the relationship between the number of teeth and the rotation.
- "Making the Grade", AIMS. Students will discover that it takes less force to lift an object along an inclined plane than it does to lift it straight up.
- "The Plane Truth", AIMS. Students will make and compare different surfaces of inclined planes, testing the efficiency of each surface.
- "A First-Class Job", AIMS. Students will discover that moving the fulcrum closer to the resistance means the load cannot be lifted as high.

SOL Pass: Simple Machines Study Guide

Interactive Websites
SOL Pass: Simple Machines Column Match
SOL Pass: Simple Machines Drag and Drop
SOL Pass: Simple Machines Matching
Simple Machine Animations

Lesson Plans
VDOE: ESS Simple and Compound Machines

Videos
BrainPOP: Pulleys

Literature/Music Connections
Screws by Chris Oxlade
Inclined Planes to the Rescue by Sharon Thales
Levers by David Glover
Pulleys and Gears by David Glover
Screws by David Glover
Ramps and Wedges by David Glover
Exploring Uses of Energy by Ed Catherall
How Wheels and Axles Work by Jim Mezzanotte
Pulleys to the Rescue by Sharon Thales
Screws to the Rescue by Sharon Thales
Wedges to the Rescue by Sharon Thales
Wheels and Axles to the Rescue by Sharon Thales

	Levers to the Rescue by Sharon Thales Fantastic Farm Machines by Cris Peterson Big Machines by Melanie Jones
Essential Vocabulary	simple machine: lever, inclined plane, wedge, wheel and axle, screw, and pulley compound machine: a combination of two or more simple machines lever: A straight rod or board that pivots on a point known as a fulcrum screw: An inclined plane wrapped around a shaft or cylinder pulley: A wheel that usually has a groove around the outside edge wheel and axle: A wheel and axle has a larger wheel (or wheels) connected by a smaller cylinder (axle) and is fastened to the wheel so that they turn together inclined plane: a sloping surface, such as a ramp wedge: Two inclined planes joined back to back.

Marking Period: Third Nine Weeks
Days: 6
Reporting Category/Strand: Life Processes

SOL 3.4	**The student will investigate and understand that adaptations allow animals to satisfy life needs and respond to the environment. Key concepts include** **a) behavioral adaptations; and** **b) physical adaptations.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● give examples of methods that animals use to gather and store food, find shelter, defend themselves, and rear young. ● describe and explain the terms camouflage, mimicry, hibernation, migration, dormancy, instinct, and learned behavior. ● explain how an animal's behavioral adaptations help it live in its specific habitat. ● distinguish between physical and behavioral adaptations of animals. ● compare the physical characteristics of animals, and explain how the animals are adapted to a certain environment. ● compare and contrast instinct and learned behavior. ● create (model) a camouflage pattern for an animal living in a specific dry-land or water-related environment. (Relates to 3.6.) ● design and construct a model of a habitat for an animal with a specific adaptation.
Essential Questions	

3rd Grade Science Curriculum Guide
Lunenburg County Schools
June 2014

Primary Resources	**Correlations** AIMS ● **"**Mealworms", AIMS. Students will use science process skills to become familiar with mealworms and their life cycles. ● "Now You See Them, Now You Don't", AIMS. Students will determine how long it takes earthworms to burrow into the ground. ● "Table Manners", AIMS. Students will simulate food gathering with four different types of insect mouths. ● "Missing Moths'", AIMS. Students will observe an environment with a variety of moths to see the effects of camouflage on animal visibility. ● "Noses for Nectar", AIMS. Students will understand how bat adaptations contribute to plant pollination. ● **"**Sensational Ears", AIMS. In a simulation activity, students will attempt to catch a moving object using only their sense of hearing (echolocation). ● **"**Make Believe Bats", AIMS. Students will play a game that simulates how bats use sound (echolocation) to determine location of potential prey. ● "The Eyes Have It", AIMS. Students will learn about the different types of vision in animals. **Interactive Websites** SOL Pass: Adaptations Matching Animal Adaptations **Lesson Plans** VDOE: Virginia Animals and Their Habitats VDOE: ESS What Do You Need? VDOE: ESS Animal Adaptations **Videos** **Literature/Music Connections** All About Animal Adaptations by John Burrud Have You Ever Seen a Hippo With Sunscreen? By Etta Kaner Animal Disguises by Belinda Weber The Big Snow by Berta Hader
Essential Vocabulary	adaptation: a change or the process of change by which an organism or species becomes better suited to its environment life cycle: series of stages a living organism goes through as it grows, develops, and matures camouflage: to hide or disguise oneself mimicry: is a special type of camouflage. Some animals mimic (look like) other things in their environment. hibernation:a deep winter sleep where some animal's body activities slow down (breathing and heart rate) and they live off stored food migration: to travel to a different place where the weather is more suited for the animal

	instinct: natural behaviors that are needed in order to survive in their environments learned behavior: behaviors taught to help survival

Marking Period: Third Nine Weeks
Days: 3
Reporting Category/Strand: Living Systems

SOL 3.5	**The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains. Key concepts include** **a) producer, consumer, decomposer;** **b) herbivore, carnivore, omnivore; and** **c) predator and prey**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● differentiate between predators and prey. ● distinguish among producers, consumers, herbivores, omnivores, carnivores, and decomposers. ● infer that most food chains begin with a green plant. ● identify sequences of feeding relationships in a food chain. ● explain how a change in one part of a food chain might affect the rest of the food chain. ● create and interpret a model of a food chain showing producers and consumers.
Essential Questions	
Primary Resources	**Correlations** AIMS ● **"**Food Chains and Food Web", AIMS. Information sheets. ● "Food Chains and Webs", AIMS. Students will learn about the interdependence of life from a study of food chains and webs. ● "A Special Plot", AIMS. Students will learn about habitats through close observation of a small area of a larger habitat. ● "Animals of a Sort", AIMS. Students will construct a tree diagram form a given set of animal pictures and related data. Project Learning Tree ● "The Fallen Log", Project Learning Tree. Students will identify some of the organisms that live in, on, and under fallen logs and describe the process of decomposition. ● "Nature's Recyclers", Project Learning Tree. Students will explain the function of scavengers and decomposers, and experiment with sowbugs to determine their role in the ecosystem.

	● "Birds and Worms", Project Learning Tree. Students will simulate how predators use their vision to find prey and describe some different ways animals use camouflage **Interactive Websites** Animal Tic Tac Toe The Food Chain **Lesson Plans** VDOE: ESS What's Eating You? VDOE: ESS What's for Dinner? VDOE: ESS Who's Eating You? **Videos** **Literature/Music Connections** Food Chains and You by Bobbie Kalman Food Chains by Anita Ganeri Who Eats What? By Patricia Lauber The Magic School Bus Gets Eaten by Patricia Relf Food Chain Frenzy by Anne Capeci What Desert Animals Eat by Joanne Mattern What Grassland Animals Eat by Joanne Mattern What Sea Animals Eat by Joanne Mattern
Essential Vocabulary	herbivore: an animal that feeds on plants carnivore: an animal that feeds on meat omnivore: an animal that feeds on both plants and meat. predator: an animal that naturally preys on others prey: an animal that is hunted and killed by another for food food chain: food relationship among plants and animals in a specific area or environment terrestrial organisms: animals found on land habitats such as deserts, grasslands, and forests aquatic organisms: animals found in water habitats such as ponds, marshes, swamps, rivers, and oceans. green plant: a plant that makes its own food from sunlight, air, and water, producers

	consumer: is an animal that eats living organisms (plant or animal) decomposers: organisms that break down decayed plants and animals into smaller pieces that can be used again by living things.

Marking Period: Third Nine Weeks
Days: 3
Reporting Category/Strand: Earth Patterns, Cycles, and Change

SOL 3.8b	**3.8 The student will investigate and understand basic patterns and cycles occurring in nature. Key concepts include** **b) animal life cycles**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● explain how some events in nature occur in a pattern or cycle, such as life cycles. ● explain the pattern of growth and change that organisms, such as the frog and butterfly undergo during their life cycle.
Essential Questions	
Primary Resources	**Correlations** AIMS ● "A Time of Their Own", AIMS. Students will observe and compare the metamorphoses of a butterfly and a moth. **Interactive Websites** SOL Pass: Life Cycles SOL Pass: Egg to Adult **Lesson Plans** **Videos** **Literature/Music Connections** The Life Cycle of a Bee by Jill Bailey A Bookworm who Hatched by Verna Aardema
Essential Vocabulary	life cycle: the series of changes in the life of an organism, including reproduction frog egg: laid in the water and covered with a jelly like substance

	tadpole: a young frog that has a tail and can breathe through its gills larva: hatches out of an egg, often worm-like pupa: occurs as the larva changes completely inside a cocoon adult: fully developed and mature

Marking Period: Third Nine Weeks
Days: 10
Reporting Category/Strand: Living Systems

SOL 3.6	**The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include** **a) aquatic ecosystems;** **b) terrestrial ecosystems;** **c) populations and communities; and** **d) the human role in conserving limited resources.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● describe major water-related ecosystems and examples of animals and plants that live in each. ● describe major dry-land ecosystems and examples of animals and plants that live in each. ● compare and contrast water-related and dry-land ecosystems. ● explain how animals and plants use resources in their ecosystem. ● distinguish between a population and a community. ● predict what would occur if a population in a specific ecosystem was to die. ● analyze models or diagrams of different water-related ecosystems in order to describe the community of organisms each contains and interpret how the organisms use the resources in that ecosystem. ● analyze models or diagrams of different dry-land ecosystems in order to describe the community of organisms each contains and interpret how the organisms use the resources in that ecosystem. ● list ways that humans can help conserve limited resources.
Essential Questions	
Primary Resources	**Correlations** AIMS ● **"**Census Takers", AIMS. Students will take samples of a critter population and estimate the total population from the samples.

- "Who's Home in the Biome?", AIMS. Students will review which plants and animals are found in each biome by playing a board game.
- What's the Net Worth?", AIMS. Students will explore the complex biodiversity by role playing the plants and animals in a rainforest food web.

Project Learning Tree

- "Tropical Treehouse", Project Learning Tree. Students will describe the plant and animals that live in different levels of the tropical rainforest and discuss a case study that involves the the rights of native inhabitants.
- "Habitat Pen Pals", Project Learning Tree. Students will distinguish between kinds of animals that can and can't live in a particular habitat.
- "Charting Diversity", Project Learning Tree. Students will organize different species of plants and animals according to various characteristics and show how these characteristics help them to adapt to their environment.

Interactive Websites
SOL Pass: Habitats and Adaptations Matching
Habitat PowerPoints

Lesson Plans
VDOE: ESS Wet and Dry
VDOE: ESS There's A Limit
VDOE ESS Aquatic Words

Videos
Ecosystems

Literature/Music Connections
Jumanji by C. Van Allsburg
Mr. Popper's Penguins byR. F. Atwat
All About Water Ecosystems by Jeffrey Hinmon
Temperate Forests by Sally Wilkins
Oceans by Greg Reid
Rain Forests by Adele Richardson
The Everglades by Wayne Lynch
Forests by Emily Green
A Place for Frogs by Melissa Stewart
Sharks by Gary Lopez
Virginia Plants and Animals by Karla Smith
What if There Were No Bees? By Suzanne Slade

	Desert Giant by Barbara Bash The Missing Gator of Gumbo Limbo by Jean Georgeer The Great Kapok Tree by L. Cherry
Essential Vocabulary	ecosystem: a biological community of interacting organisms and their physical environment aquatic ecosystem: an ecosystem that includes those with fresh water or salt water. terrestrial ecosystem: an ecosystem include deserts, grasslands, rain forests, and forests population: a group of organisms of the same kind that lives in the same place. community: all of the populations that live together in the same place. habitat: an area where a plant of animal lives

Marking Period: Third Nine Weeks
Days: 3
Reporting Category/Strand: Earth Resources

SOL 3.10	**The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include** **a) the interdependency of plants and animals;** **b) the effects of human activity on the quality of air, water, and habitat;** **c) the effects of fire, flood, disease, and erosion on organisms; and** **d) conservation and resource renewal.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● explain how organisms in an area are dependent on each other. ● compare and contrast human influences on the quality of air, water, and habitats. ● analyze the effects of fire, flood, disease, and erosion on organisms and habitats. ● describe how conservation practices can affect the survival of a species. ● describe a conservation practice in the local community.
Essential Questions	
Primary Resources	**Correlations** AIMS ● **"**People Need Plants", AIMS.

- Students will discover the many products from plants.
- "Agent Erosion", AIMS. Students will simulate the erosion caused by wind, water, and ice and observe the effects.
- "Quaking Earth", AIMS. Students will do two investigations that will give them an idea what happens to the surface of Earth and buildings on Earth when it quakes.
- "Volcanoes", AIMS. Students will be able to describe a volcano and how it erupts.

Project Learning Tree

- "Three Cheers for Trees", Project Learning Tree. Students will describe how trees benefit people and how trees may be used to improve the human-made environment.
- "Pollution Search", Project Learning Tree. Students will describe the effects that various pollutants can have on people, wildlife, and plants.
- "Trees for Many Reasons", Project Learning Tree. Students will read, discuss, and analyze The Lorax or The Man Who Planted Trees Relating it to the proper and improper use of natural resources.

Interactive Websites

Lesson Plans
VDOE: ESS Who Killed SAV?
VDOE: ESS As the River Flows
VDOE: ESS Erosion, Fire, Flood, and Disease

Videos
Disasters

Literature/Music Connections
Air Pollution by Rhonda Donald
Someday a Tree by Eve Bunting
Keeping it Clean by Peggy Hock
Oil Spill by Melvin Berger
Let's Save Water! By Sara Nelson
Endangered Animals Books by Bobbie Kalman
Fire in the Forest: A Cycle of Growth and Renewal by Lawrence Pingle
The Summer Sands by Sherry Garland
The Great Kapok Tree by L. Cherry
Here is the African Savanna by Madeline Dunphy
Flood by Catherine Chambers
Drought by Catherine Chambers
Bringing the Rain to Kapiti Plain by Verna Aadema
Hurricane and Tornado by Jack Challoner

3rd Grade Science Curriculum Guide
Lunenburg County Schools
June 2014

Essential Vocabulary	conservation: the action of conserving something fire: burning flood: an event that happens when a body of water overflows onto land disease: a disorder of structure or function in a human, animal, or plant erosion: interdependency: every living thing depends on every other living thing to survive

Marking Period: Fourth Nine Weeks
Days: 2
Reporting Category/Strand: Earth Patterns, Cycles, and Change

SOL 3.8c	**The student will investigate and understand basic patterns and cycles occurring in nature. Key concepts include** **c) plant life cycles.**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● explain how some events in nature occur in a pattern or cycle, such plants.
Essential Questions	
Primary Resources	**Correlations** AIMS ● "A Seed Grows", AIMS. Students will grow a bean seed and watch how a plant begins. **Interactive Websites** SOL Pass: Plants **Lesson Plans** **VDOE ESS Let It Grow** **Videos** **Literature/Music Connections** The Great Kapok Tree by L. Cherry Seed, Soil, Sun by Cris Peterson

	From Seed to Plant by Allan Fowler The Life Cycle of a Bean by Linda Tagliaferro The Life Cycle of an Apple Tree by Linda Tagliaferro Curious George Plants a Seed by Erica Zappy How a Seed Grows by Helene Jordan
Essential Vocabulary	life cycle: the series of changes in the life of an organism, including reproduction

Marking Period: Fourth Nine Weeks
Days: 10
Reporting Category/Strand: Interrelationships in Earth/Space Systems

SOL 3.7	**The student will investigate and understand the major components of soil, its origin, and its importance to plants and animals including humans. Key concepts include** **a) soil provides the support and nutrients necessary for plant growth;** **b) topsoil is a natural product of subsoil and bedrock;** **c) rock, clay, silt, sand, and humus are components of soils; and** **d) soil is a natural resource and should be conserved**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● observe and recognize that soil, as a natural resource, provides the support and nutrients necessary for plant growth. ● understand the key terminology related to soil, including humus, nutrients, topsoil, and bedrock. ● interpret and illustrate a basic diagram showing major soil layers, including bedrock, subsoil, and topsoil. ● analyze and describe the different components of soil, including rock fragments, clay, silt, sand, and humus. ● explain how soil forms over time. ● design an investigation to compare how different types of soil affect plant growth. This includes organizing data in tables and constructing simple graphs. ● collect, chart, and analyze data on soil conservation on the school grounds. ● evaluate the importance of soil to people. ● describe how soil can be conserved
Essential Questions	
Primary Resources	**Correlations**

	AIMS ● "What Makes Soil?", AIMS. Students will explore the components of different soil samples. ● "Don't Mix Me Up", AIMS. Students will determine which soil mixture promotes the best growth by raining a plant from a seed. ● "Which Soil Works Best?", AIMS. Students will plant seeds in a variety of soils to ● determine the best type for plant growth. ● "Soil Samplers", AIMS. Students will learn to recognize many different kinds of materials in the soil by sorting and grouping their findings. ● "Soil Study", AIMS. Students will observe soil samples to discover that soil is made from small bits of rock and once living things. ● "Sandpile", AIMS. Students will observe that sand is made from small bits of different rocks. **Interactive Websites** Earth's Soil SOL Pass: Soil Matching SOL Pass: Soil Millionaire Soil Quiz **Lesson Plans** **VDOE ESS Digging In** **VDOE ESS Drain This!** **VDOE ESS Save Our Soil** **Videos** **Literature/Music Connections** The Magic School Bus Inside the Earth by Joanna Cole Woods by Donald M. Silver Soil by Sally Walker Soil by Adele Richardson
Essential Vocabulary	soil: the upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles decomposition: breaking down once living plants and animals into smaller pieces soil the loose material that covers Earth's surface made up of small pieces of rocks and once living things weathering: the breaking down of rock into tiny pieces by wind or water topsoil: the upper soil surface and a natural product of subsoil and bedrock subsoil: a layers of soil under the topsoil that are formed over a long period of time. bedrock: layers of soil under the topsoil that are formed over a long period of time.

	clay: tiny particles of soil that hold water well and provides nutrients sand: made up of larger grains of worn-down rock, has few nutrients, and does not hold water well silt: made up of very small broken pieces of rock. Its particles are larger than clay and smaller than sand.

Marking Period: Fourth Nine Weeks
Days: 10
Reporting Category/Strand: Earth Patterns, Cycles, and Change

SOL 3.8a	**The student will investigate and understand basic patterns and cycles occurring in nature. Key concepts include** **a) patterns of natural events such as day and night, seasonal changes, simple phases of the moon, and tides**
Essential Knowledge/Skills/Understandings	In order to meet this standard, it is expected that students will ● explain how some events in nature occur in a pattern or cycle, such as the seasons, day and night, phases of the moon (first quarter, full, last [third] quarter, new), and tides. ● recognize that the relationships that exist between and among Earth, the sun, and the moon result in day and night, seasonal changes, phases of the moon, and the tides. ● model and describe how Earth's rotation causes day and night. ● model and describe how the sun's rays strike Earth to cause seasons. ● observe, chart, and illustrate phases of the moon (first quarter, full, last [third] quarter, new), and describe the changing pattern of the moon as it revolves around Earth.
Essential Questions	
Primary Resources	**Correlations** AIMS ● Sunny-Side Up", AIMS. Students will discover information about the relationship of the earth to the sun by studying shadow patterns. ● "Facing Up to the Moon", AIMS. Students construct a moon-Earth model and use it to determine how and in what order the phases of the moon occur. **Interactive Websites** SOL Pass: Earth's Tilt Millionaire Phases of the Moon Animation **Lesson Plans**

	VDOE ESS Phases of the Moon **VDOE ESS The Tide Waits for No Man** **VDOE ESS As The World Turns** **VDOE ESS Around and Around** **Videos** Phases of the Moon-Discovery A Closer Look at the Moon **Literature/Music Connections** The Moon: Jack and Jill and Other Legends by F. Branley Earth Cycles by Michael Elsohn Ross The Seasons Cycle by Cheryl Jakab Day and Night by Jason Cooper The Phases of the Moon by Suzanne Slade The Four Seasons by Suzanne Slade
Essential Vocabulary	seasons: each of the four divisions of the year (spring, summer, autumn, and winter) marked by particular weather patterns and daylight hours, resulting from the earth's changing position with regard to the sun. phase of the moon: the shape of the sunlit portion of the Moon as seen by an observer, usually on Earth. first quarter moon: one week after a new moon full moon: the phase of the moon in which its whole disk is illuminated last [third] quarter: one week after a full moon new moon: the phase of the moon when it is in conjunction with the sun and invisible from earth, or shortly thereafter when it appears as a slender crescent tide: the rising and falling of the sea, usually twice in each lunar day at a particular place, due to the attraction of the moon and sun.